

SWBAT: compare electricity to pumped water

Jan 4-7:20 AM

# Welcome!!!

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SECA Physics  
Monday 23 February 2015

\* Pick up:

<http://tinyurl.com/SECASUMMER15>

- slip of paper (for later)
- get your concept sheet from the slot

Opening Question:

What else "flows" besides electric charge?

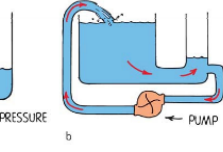
WATER LIGHT?

AIR LAVA

Centering

Sep 7-7:04 AM

Pressure



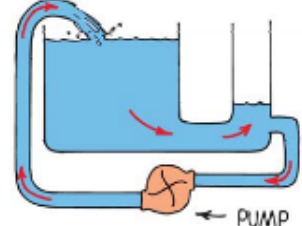
b

t: 6 rows total

An electron is  $1.6 \times 10^{-19} \text{ C} = .000000000000000000016 \text{ C}$

Meaning	Symbol	Units	Analogy
<b>CHARGE</b> PROPERTY OF PROTONS & ELECTRONS THAT CAUSES ATTRACTION & REPULSION	$q$	COULOMBS $C$	MEASURE WATER THE WATER ITSELF
<b>VOLTAGE</b> = ELECTRIC POTENTIAL POTENTIAL BASED ON POSITION IN AN ELECTRIC FIELD "PUSH"	$V$	VOLTS $V$ $V = \frac{J}{C}$	PUMP WATER PRESSURE UP HIGH
<b>CURRENT</b> THE FLOW OF ELECTRIC CHARGE $= \frac{\text{CHARGE}}{\text{TIME}}$	$I$ $I = \frac{q}{t}$	AMPERE $A$ $1A = \frac{1C}{s}$	FLOW OF WATER $\frac{q}{I \cdot t}$

Feb 23-7:34 AM



b

b. Water continues to flow because a difference in pressure is maintained with the pump.

**CURRENT? VOLTAGE?**  
**WHY DO YOU SAY THAT?**

Water analogy -- using "Numbered Heads Together"

- In groups, count off
- As a group, discuss the questions and have a "group" answer
- Any person in the group should be able to tell the class the group's answer
- I will pick a number, and that person will be called on to explain what the group decided.

What in the water example is like current? What is like voltage?  
WHY do you say that???

Feb 23-7:34 AM

## Worksheet 34-1

- alone or with another person
- use your yellow concept sheet
- some questions will be on Daily 3

Feb 27-7:30 AM

### Electrons in a wire demo

How many protons in the wire?

How many electrons in the wire?

Is the wire positive, negative, or neutral? (+, -, or 0)

How many electrons are in the wire while / after current flows?

What charge is the wire now? (+, -, or 0)

T/F: The electron that got pushed in is the one that came out

T/F: Something came out of the wire as soon as something went in  
(The flow was fast)

T/F: The electrons inside moved super fast, raced from one end of the tube to the other.

Feb 28-7:46 AM

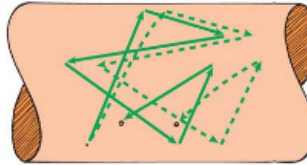
"Current" misconceptions...TRUTHMISCONCEPTION

1) Wires are empty of electrons and filled up when there's a current

2) Electrons flow super fast

3) Wires are neutral when a current is flowing

**FIGURE 30-11a**  
The solid lines depict a random path of an electron bouncing off atoms in a conductor. The dashed lines show an exaggerated view of how this path changes when an electric field is applied. The electron drifts toward the right with an average speed less than a snail's pace.



Feb 23-7:43 AM

Daily 3 Questions

- \* Every day except test/project days
- \* 3 Questions on the topics of the day
- \* Main source of daily points
- \* I am happy to give credit when I have no concerns about someone giving or getting help with the answers.

CP Hmwk - does voltage cause current or does current cause voltage? Defend your answer.

You can't get your points if you don't have your **NAME!!!**

Name	Period
1.	
2.	
3.	

Sep 9-7:32 AM

1. What are the (SI) **units** for voltage?

VOLTS, V

2. What in the water analogy is like current?

FLOW OF WATER

3. When a charge of 15 C flows by a place each second, the current is 15 A.

Feb 18-6:59 AM